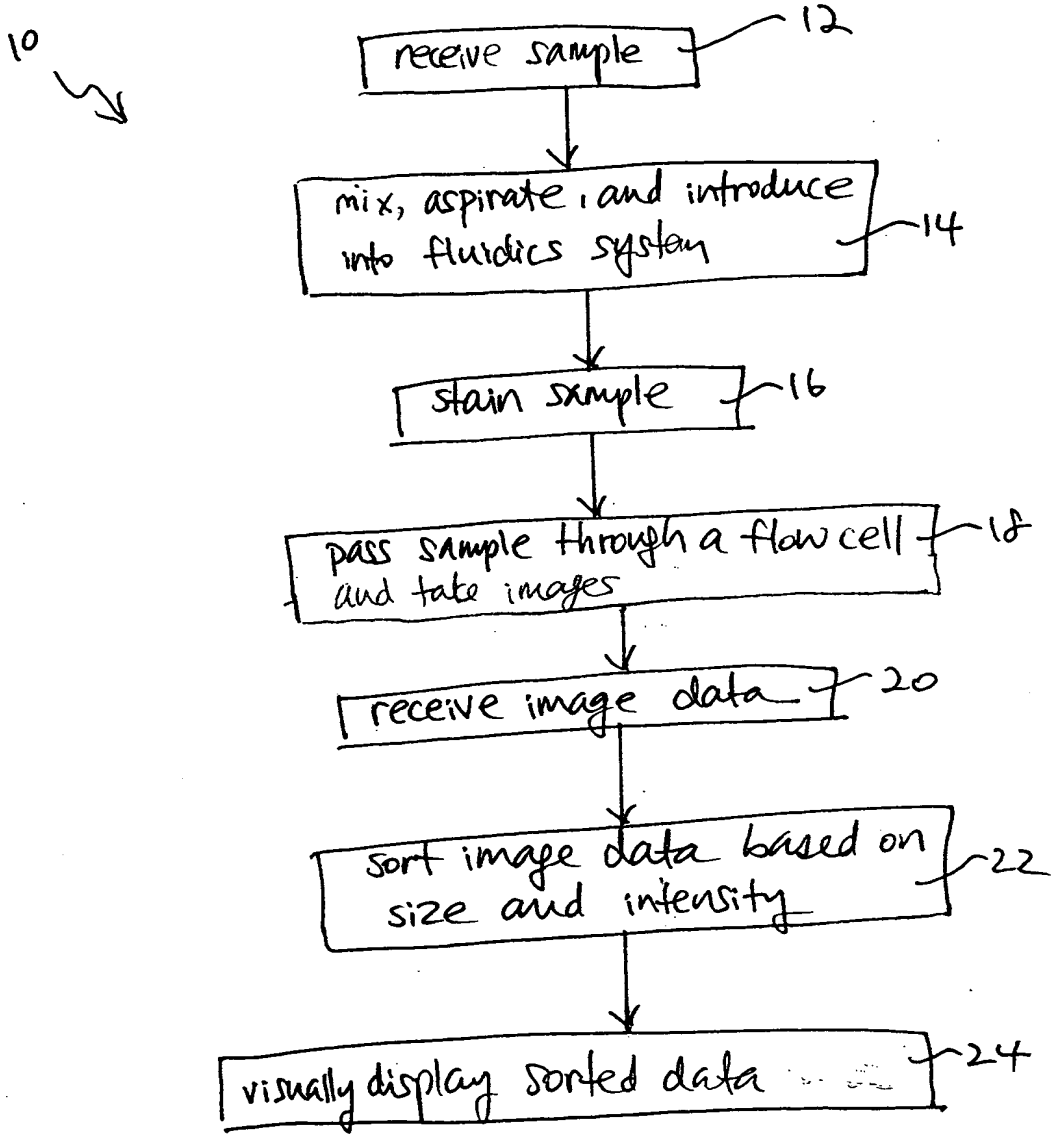

10
receive sample
12
mix, aspirate, and introduce into fluidics system
14
stain sample
16
pass sample through a flow cell and take images
18
receive image data
20
sort image data based on size and intensity
22
visually display sorted data
24

FIG. 1

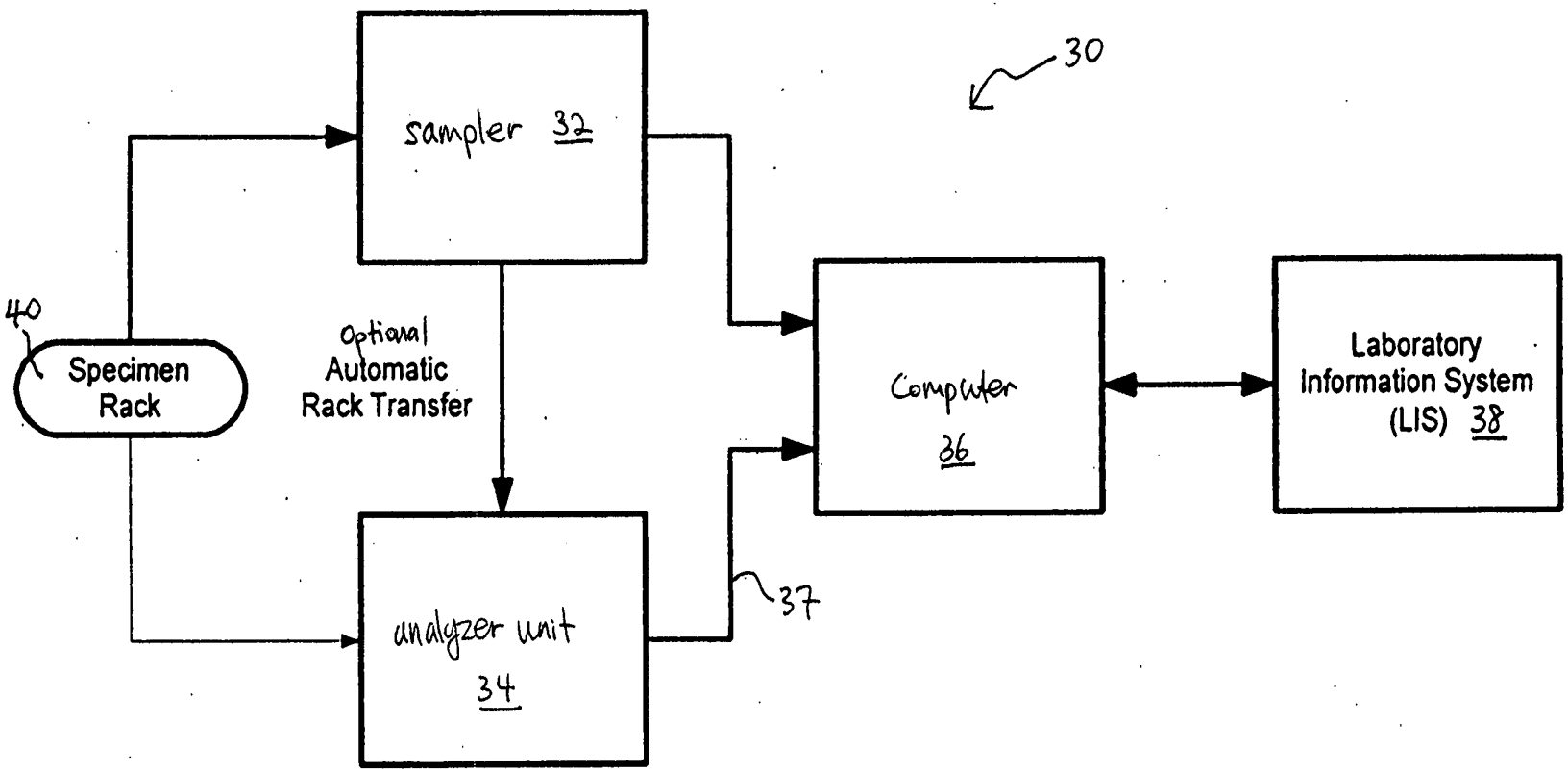

30
sampler 32
40
Specimen Rack
Optional Automatic Rack Transfer
Computer 36
Laboratory Information System (LIS) 38
analyzer unit 34
37

FIG. 2

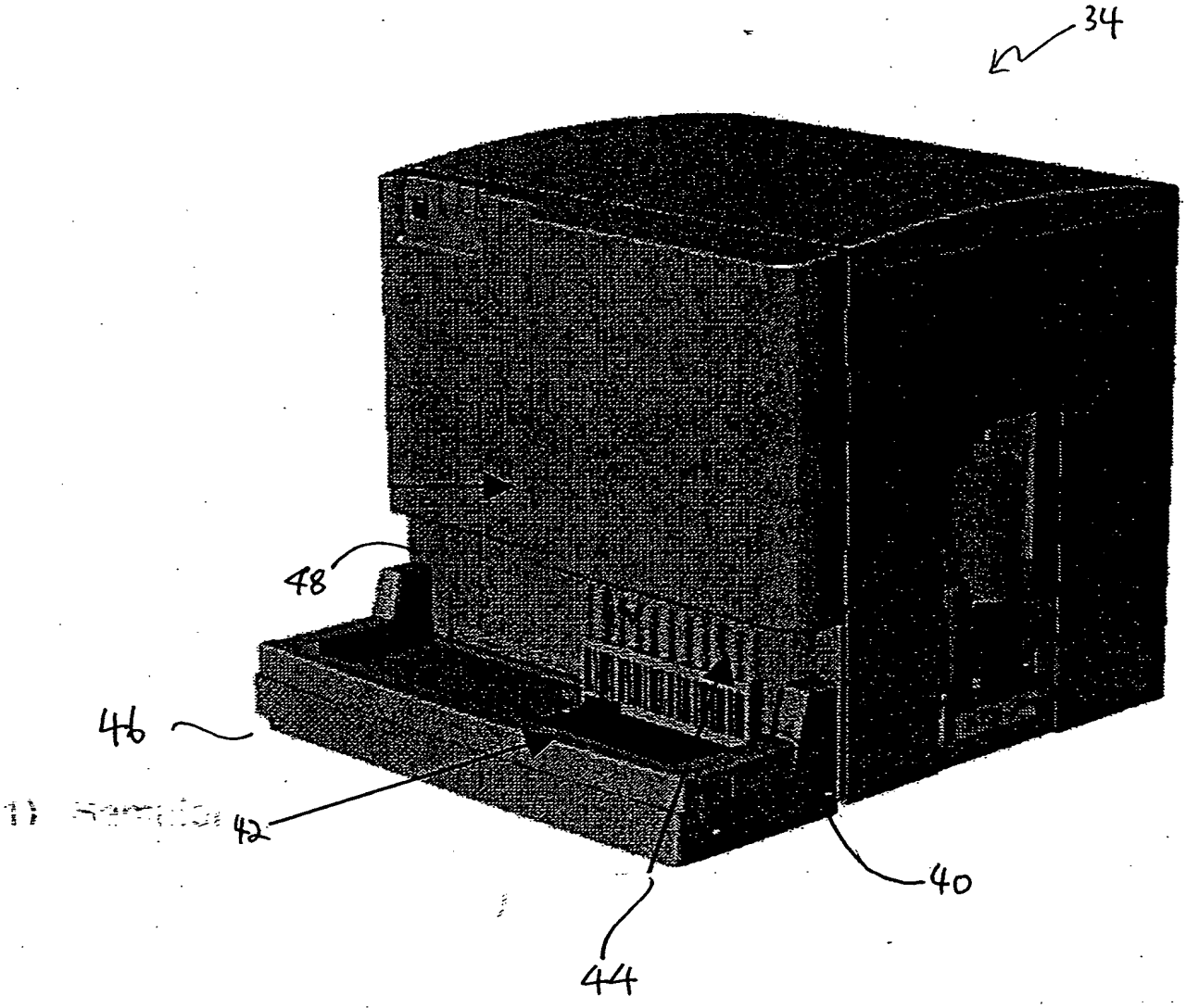


FIG. 3

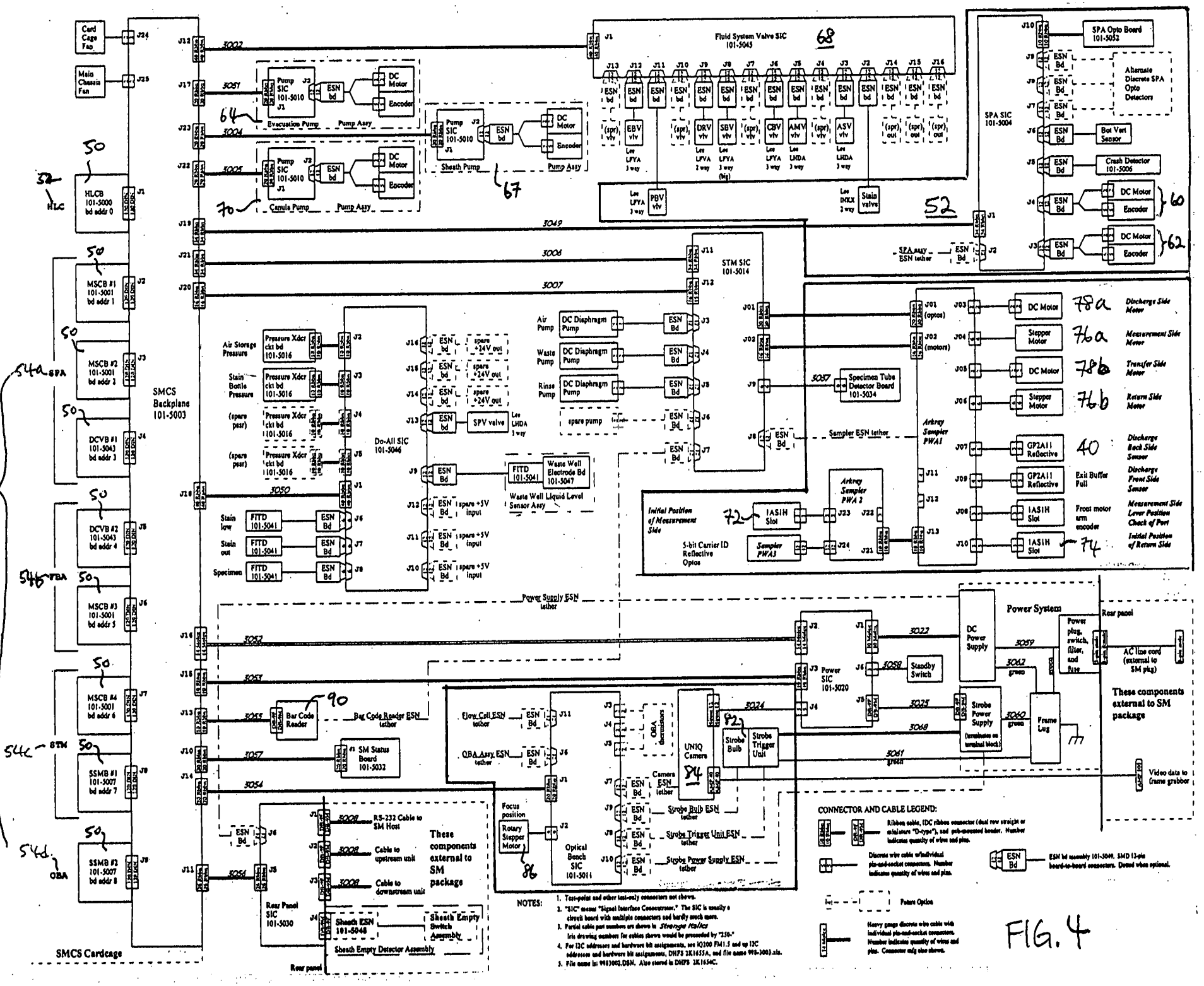

SMCS Cardcage
SMCS Backplane 101-5003
Card Cage Fan
Main Chassis Fan
HLCB 101-5000 bd addr 0
MSCB #1 101-5001 bd addr 1
MSCB #2 101-5001 bd addr 2
DCVB #1 101-5043 bd addr 3
DCVB #2 101-5043 bd addr 4
MSCB #3 101-5001 bd addr 5
MSCB #4 101-5001 bd addr 6
SSMB #1 101-5007 bd addr 7
SSMB #2 101-5007 bd addr 8
Fluid System Valve SIC 101-5045
Pump SIC 101-5010
Evacuation Pump
Sheath Pump
Canula Pump
Pump Assy
DC Motor
Encoder
ESN bd
EBV vlv
DRV vlv
SBV vlv
CBV vlv
AMV vlv
ASV vlv
PBV vlv
Stain valve
SPA SIC 101-5004
SPA Opto Board 101-5052
Alternate Discrete SPA Opto Detectors
Bot Vert Sensor
Crash Detector 101-5006
SPA assy ESN tether
STM SIC 101-5014
Air Pump
Waste Pump
Rinse Pump
DC Diaphragm Pump
spare pump
Air Storage Pressure
Stain Bottle Pressure
Pressure Xdcr ckt bd 101-5016
Do-All SIC 101-5046
SPV valve
Waste Well Electrode Bd 101-5047
Waste Well Liquid Level Sensor Assy
FITD 101-5041
Stain low
Stain out
Specimen
Specimen Tube Detector Board 101-5034
Sampler ESN tether
Artery Sampler PWA1
Artery Sampler PWA2
Sampler PWA3
Initial Position of Measurement Side
5-bit Carrier ID Reflective Optos
IASIH Slot
Stepper Motor
GP2A11 Reflective
Discharge Side Motor
Measurement Side Motor
Transfer Side Motor
Return Side Motor
Discharge Back Side Sensor
Exit Buffer Full
Discharge Front Side Sensor
Measurement Side Lever Position Check of Port
Front motor arm encoder
Initial Position of Return Side
Power Supply ESN tether
Power System
DC Power Supply
Power plug, switch, filter, and fuse
Rear panel
AC line cord (external to SM pkg)
Power SIC 101-5020
Standby Switch
Strobe Power Supply
Frame Lug
These components external to SM package
Video data to frame grabber
Bar Code Reader
Bar Code Reader ESN tether
SM Status Board 101-5032
Flow Cell ESN tether
QBA Assy ESN tether
QBA detectors
UNIQ Camera
Strobe Bulb
Strobe Trigger Unit
Camera ESN tether
Strobe Bulb ESN tether
Strobe Trigger Unit ESN tether
Strobe Power Supply ESN tether
Focus position
Rotary Stepper Motor
Optical Bench SIC 101-5011
Rear Panel SIC 101-5030
RS-232 Cable to SM Host
Cable to upstream unit
Cable to downstream unit
Sheath ESN 101-5048
Sheath Empty Switch Assembly
Sheath Empty Detector Assembly
CONNECTOR AND CABLE LEGEND:
Ribbon cable, IDC ribbon connector (dual row straight or miniature "D-type"), and pcb-mounted header. Number indicates quantity of wires and pins.
Discrete wire cable w/individual pin-and-socket connectors. Number indicates quantity of wires and pins.
ESN bd assembly 101-5049, SMD 13-pin board-to-board connectors. Dotted when optional.
Future Option
Heavy gauge discrete wire cable with individual pin-and-socket connectors. Number indicates quantity of wires and pins. Connector mfg also shown.
NOTES:
1. Test-point and other test-only connectors not shown.
2. "SIC" means "Signal Interface Concentrator." The SIC is usually a circuit board with multiple connectors and hardly much more.
3. Partial cable part numbers are shown in Stranger Italics. Iris drawing numbers for cables shown would be preceded by "150-"
4. For I2C addresses and hardware bit assignments, see IQ200 FM1.5 and up I2C addresses and hardware bit assignments, DHFS 1K1655A, and file name 998-3003.xls.
5. File name is: 9983003.DSN. Also stored in DHFS 1K1654C.

FIG. 4

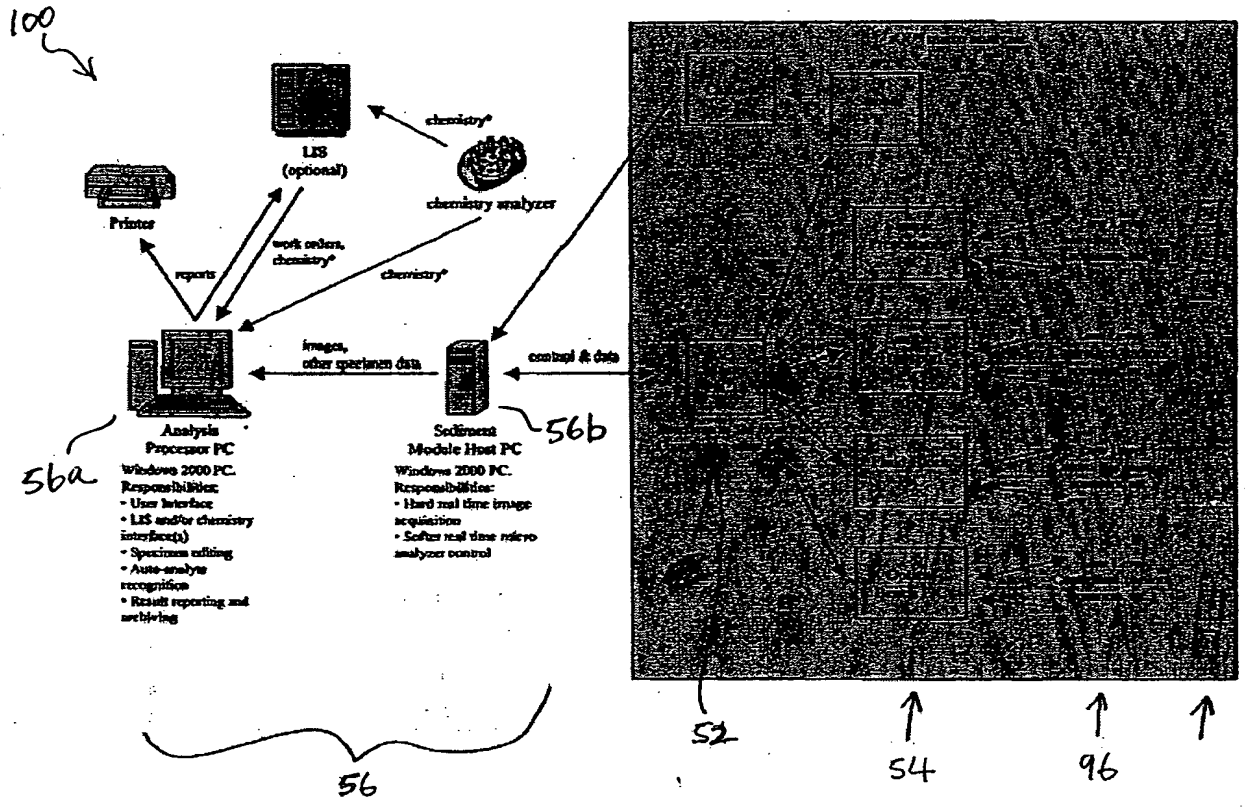

100
LIS
(optional)
chemistry*
chemistry analyzer
Printer
reports
work orders,
chemistry*
chemistry*
images,
other specimen data
control & data
Analysis
Processor PC
Windows 2000 PC.
Responsibilities:
• User Interface
• LIS and/or chemistry
interface(s)
• Specimen editing
• Auto-analyte
recognition
• Result reporting and
archiving
Sediment
Module Host PC
Windows 2000 PC.
Responsibilities:
• Hard real time image
acquisition
• Softer real time micro
analyzer control
56a
56b
56
52
54
96

FIG. 5

600

L1	L2	Begin (602)	End (604)	Comment (606)
R	H	1	14	Reset third level controllers
1	6	15	99	Resume running racks
G	O	18	99	Run racks under host control
S	S	395	434	Service Specimen (run tubes w/o host PC)
0	E	100	103	Clear Rack
R	Q	104	148	Run QC Control
1	7	149	335	Run autofocus control
W	8	336	349	Wait for command, button, rack or timeout
Z	Z	393	394	Sleep
P	I	350	366	Irisolve Clean
W	S	435	439	Short Wakeup
W	M	440	444	Medium Wakeup
W	L	445	449	Long Wakeup
S	D	450	453	Shutdown
W	A	350	392	Wash with bleach
D	L	454	481	run Diluent
K	L	482	485	KilL (wait for power off)
B	X	486	487	Background Exit Error

FIG. 6

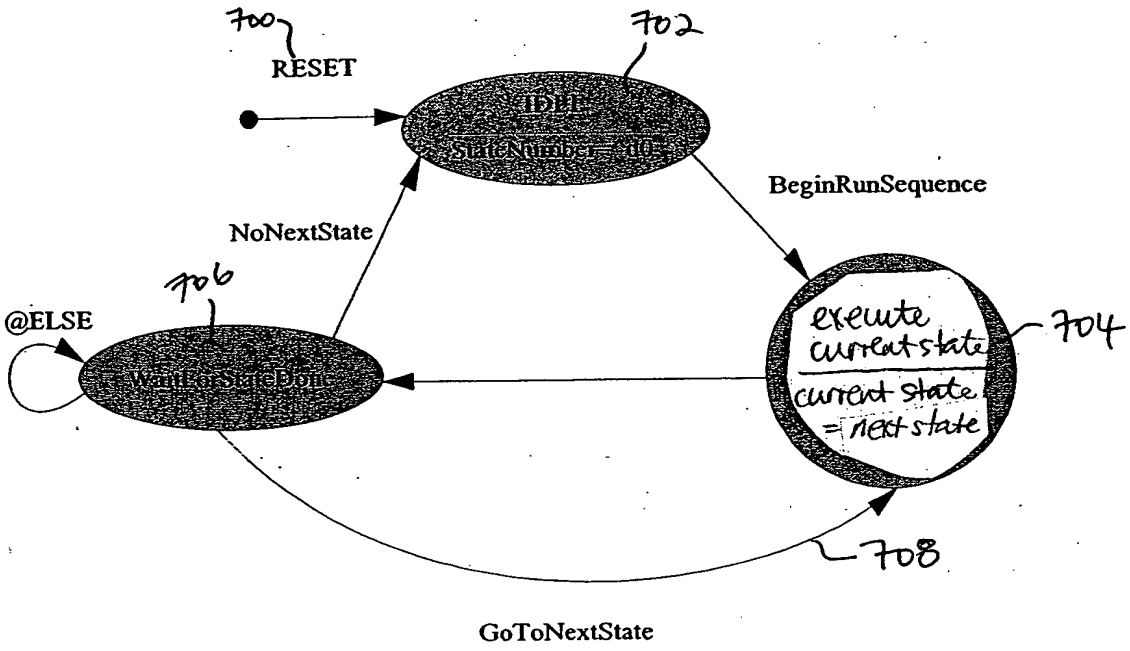
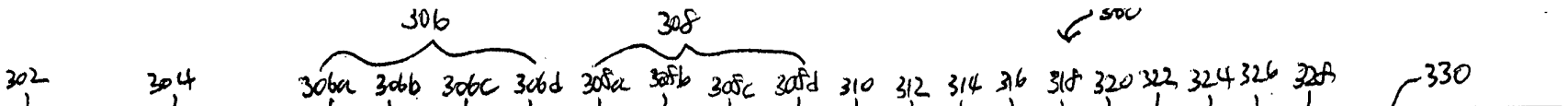

700
RESET
702
IDLE
StateNumber = 0
BeginRunSequence
NoNextState
706
@ELSE
WaitForStateDone
execute current state
current state = next state
704
708
GoToNextState

FIG. 7



State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
0		0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0007	0X43	0X0032	0X01	0X03	0X0000	0X0101	0X5738	0X01, 0X03, 0X0000, 0X0101, 0X5738),
1	Reset HLCs	RE	RE	RE	RE	0XFF	0XFF	0XFF	0XFF	0X0000	0	0X0008	0X44	0X0000	0X00	0X00	0XCE4E	0X0000	0X0000	0X00, 0X00, 0XCE4E, 0X0000, 0X0000),
2	Start system bottle fill	S1	0X0000	0X0000	0X0000	0X32	0X00	0X00	0X00	0X0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0002	0x0000	0X0000	0x00, 0x00, 0x0002, 0x0000, 0X0000),
3	Wait for SPA idle and sheath bottle full or timeout	0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0	0x0005	0x42	0x0033	0x01	0x01	0X8303	0X0000	0X0000	0x01, 0x01, 0X8303, 0X0000, 0X0000),
4	Turn off Sheath pump	S0	0X0000	0X0000	0X0000	0X33	0X00	0X00	0X00	0X0000	0	0X0000	0x00	0X0000	0X00	0X00	0X0002	0X0000	0X0000	0X00, 0X00, 0X0002, 0X0000, 0X0000),
5	Wait for S0 idle	0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0002	0X0000	0X0000	0X00, 0X00, 0x0002, 0X0000, 0X0000),
6	Test sheath low sense condition	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0032	0x00	0x80	0X8001	0X0001	8	0x00, 0x80, 0X8001, 0X0001, 8),
7	Sheath sense is ok, send message to ToSM	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x1F	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	11	0x00, 0x00, 0x0000, 0x0101, 11),
8	Test sheath empty sense condition	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0032	0x00	0x40	0X8001	0X0001	10	0x00, 0x40, 0X8001, 0X0001, 10),
9	Sheath sense is low, send message to ToSM	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x20	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	11	0x00, 0x00, 0x0000, 0x0101, 11),
10	Sheath sense is empty, send message to ToSM, branch to Clean Rack	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x21	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	0x3045	0x00, 0x00, 0x0000, 0x0101, 0x3045),
11	Start SF,Func,PH,HC,HS	PH	HS	CR	0x0000	0x00	0X21	0X00	0X00	0X0000	0	0x0009	0x44	0X0000	0X00	0X00	0X005F	0X0000	0X0000	0X00, 0X00, 0X005F, 0X0000, 0X0000),
12	Wait for SPA idle	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
13	Wait for STM idle	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0xFF	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X001F	0X00, 0X00, 0X001F, 0X0000, 0X0000),
14	End RH	0X0000	0X0000	0X0000	0x0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
15	Beginning to Go/Resume: (16) Set front panel lights (button green, LED blue)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X6000	0X09	0X00	0x0101	0X0000	0X0000	0X09, 0X00, 0x0101, 0X0000, 0X0000),
16	Re-read the barcode	0X0000	0X0000	BC	0X0000	0X00	0X00	0x44	0X00	0X0000	0	0x000E	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
17	Branch to "Retrieve tube number"	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0x0101	42	0X00, 0X00, 0X0000, 0x0101, 42),
18	Beginning of GO command: ask SM if we can start	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0X82	0X0000	0X00	0x6001	0x11	0X00	0X0101	0X0000	0X0000	0x11, 0X00, 0X0101, 0X0000, 0X0000),
19	Wait for SM reply, whose argument indicates whether to proceed	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3044	0	0x000F	0x44	0x6001	0x11	0X00	0X001F	0X0000	0X0000	0x11, 0X00, 0X001F, 0X0000, 0X0000),
20	If SM replies '00' branch to CANNOT_GO, else fall through	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	98	0X00, 0X00, 0X0101, 0X0020, 98),
21	Reset HLCs	RE	RE	RE	RE	0XFF	0XFF	0XFF	0XFF	0X0000	0	0X0010	0x44	0x6000	0x11	0X00	0XCA4A	0X0000	0X0000	0x11, 0X00, 0XCA4A, 0X0000, 0X0000),
22	Make sure output is clear (STM:IC returns 'T' or 'F')	0x0000	0x0000	IC	0X0000	0x00	0x00	0x00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
23	Got 'T'? If so, branch to SetFrontPanelLights1	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x54	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0101	0x0008	26	0X00, 0X00, 0x0101, 0x0008, 26),
24	Got 'F'? If so, branch to CANNOT_GO	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x46	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0101	0x0008	98	0X00, 0X00, 0x0101, 0x0008, 98),
25	Loop back to LookingForT1	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0x0000	0x00	0X00	0x0000	0x0101	23	0x00, 0X00, 0x0000, 0x0101, 23),
26	Set front panel lights (button green, LED blue)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X00	0X0000	0	0X0000	0X00	0X6000	0X09	0X00	0X005F	0X0000	0X0000	0X09, 0X00, 0X005F, 0X0000, 0X0000),
27	Start sheath bottle fill	S1	0X0000	0X0000	0X0000	0X32	0X00	0X00	0X00	0X0000	0	0X0000	0x00	0X0000	0X00	0X00	0x0002	0X0000	0X0000	0X00, 0X00, 0x0002, 0X0000, 0X0000),
28	Wait for SPA idle and sheath bottle full or timeout	0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0	0x0005	0x42	0x0033	0x01	0x01	0X8303	0X0000	0X0000	0x01, 0x01, 0X8303, 0X0000, 0X0000),
29	Turn off Sheath pump	S0	0X0000	0X0000	0X0000	0X33	0X00	0X00	0X00	0X0000	0	0X0000	0x00	0X0000	0X00	0X00	0X0002	0X0000	0X0000	0X00, 0X00, 0X0002, 0X0000, 0X0000),
30	Wait for S0 idle	0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0002	0X0000	0X0000	0X00, 0X00, 0x0002, 0X0000, 0X0000),
31	Test sheath low sense condition	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0032	0x00	0x80	0X8001	0X0001	33	0x00, 0x80, 0X8001, 0X0001, 33),
32	Sheath sense is ok, send message to ToSM	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x1F	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	36	0x00, 0x00, 0x0000, 0x0101, 36),
33	Test sheath empty sense condition	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0032	0x00	0x40	0X8001	0X0001	35	0x00, 0x40, 0X8001, 0X0001, 35),
34	Sheath sense is low, send message to ToSM	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x20	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	36	0x00, 0x00, 0x0000, 0x0101, 36),
35	Sheath sense is empty, send message to ToSM, branch to Clean Rack	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x21	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	0x3045	0x00, 0x00, 0x0000, 0x0101, 0x3045),
36	Tell STM to find rack; HC to set CP and SP at starting position	PH	HC	M1	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
37	If 31 from STM goto WaitUntilSTMAtIdle1	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X31	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0008	40	0X00, 0X00, 0X0101, 0X0008, 40),
38	No rack -- EndGoBranch	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X39	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0008	94	0X00, 0X00, 0X0101, 0X0008, 94),
39	Loop Back	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0101	37	0X00, 0X00, 0X001F, 0X0101, 37),
40	WaitUntilSTMAtIdle1 (wait for SPA idle as well)	0X0000	0X0000	0X0000	0X0000	0xFF	0XFF	0XFF	0X00	0X0000	0	0x0011	0x44	0X0000	0X00	0X00	0x8E0E	0X0000	0X0000	0X00, 0X00, 0x8E0E, 0X0000, 0X0000),
41	Move to Next tube position (first tube aspirate position)	0X0000	0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0x0012	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
42	Retrieve tube number; tell host we're alive; branch to End Rack if 11 (0x0B), term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x0B	0X00	0X0000	0x32	0x0013	0x44	0X0000	0X00	0X00	0X0101	0X0008	81	0X00, 0X00, 0X0101, 0X0008, 81),
43	Retrieve stored tube detect value; branch to "Move to Next tube..." if 0	0X0000	0X0000	0X070A	0X0000	0X00	0X00	0x00	0X00	0X0000	0	0x0014	0x44	0X0000	0X00	0X00	0X0101	0X0008	41	0X00, 0X00, 0X0101, 0X0008, 41),
44	Retrieve rack id; branch to "RQ" if 29	0X0000	0X0000	0X0709	0X0000	0X00	0X00	0x1D	0X00	0X0000	0	0x0015	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x5251	0X00, 0X00, 0X0101, 0X0008, 0x5251),
45	Retrieve tube id (bar code)	0X0000	0X0000	0X0707	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0x0016	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
46	Get sample info from host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3032	0X81	0x0017	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
47	If SM replies '00' branch to "Move to Next tube..."	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	41	0X00, 0X00, 0X0101, 0X0020, 41),

Fig. 8A

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
48	If SM replies "Z", branch to "0e" (Clear Rack)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X2D32	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
49	To test tube (initialize EP pump)	TT	0X0000	0X0000	0X0000	0x11	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
50	Wait for TT complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
51	Wait for "image processing idle"	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
52	Start sheath for background capture	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),
53	Wait for SB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
54	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0018	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
55	Capture background and wait for frame processing complete (future wait for frame capture complete) or short sample detector	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0X83	0x0000	0x00	0x0032	0x00	0x02	0x0001	0x0010	57	0x00, 0x02, 0x0001, 0x0010, 57),
56	Send "Short Sample" signal and wait for frame processing complete (future wait for frame capture complete). If exceeds 10 secs - goto BX	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0x31	0X0019	0x43	0x0000	0x00	0x00	0X0010	0x0000	0x4258	0x00, 0x00, 0X0010, 0x0000, 0x4258),
57	Turn off EP pump on SPA	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),
58	Wait for EB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
59	Move pipette down to aspirate position in test tube	TD	0X0000	0X0000	0X0000	0X13	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
60	Wait for TD complete and "image processing idle"	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0x3338	0x37	0X0000	0X00	0X0000	0X00	0X00	0x9212	0X0000	0X0000	0X00, 0X00, 0x9212, 0X0000, 0X0000),
61	Start aspiration for sample transfer	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
62	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
63	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0062	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
64	Capture sample frames and wait for sample frame capture complete or short sample detector	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0X85	0x0000	0x00	0x0032	0X00	0x02	0x0001	0x0010	66	0X00, 0x02, 0x0001, 0x0010, 66),
65	Send "Short Sample" signal and wait for sample frame capture complete	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0x31	0X0063	0x43	0X0000	0X00	0X00	0X0010	0X0000	0X4258	0X00, 0X00, 0X0010, 0X0000, 0X4258),
66	Turn off EP pump on SPA, SP pump on FBA	EB	EB	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
67	Wait for EB's complete (SPA and FBA)	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X8606	0X0000	0X0000	0X00, 0X00, 0X8606, 0X0000, 0X0000),
68	To Waste Well	TW	DB	0X0000	0X0000	0x15	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
69		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
70		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
71	Test Sheath Full Sensor	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0x0033	0x01	0x01	0x0101	0x0001	73	0x01, 0x01, 0x0101, 0x0001, 73),
72	Turn On Rinse Pump and Rinse Pipetter	TR	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0000	0x001F	74	0X00, 0X00, 0x0000, 0x001F, 74),
73	Turn On Rinse Pump and Rinse Pipetter	TQ	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
74		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
75		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
76	Clear Pipetter/Home CP and SP/Move to Next Tube	CP	HC	MN	0X0000	0X16	0X00	0X00	0X00	0X0000	0x36	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
77		0X0000	0X0000	0X0000	0X0000	0XFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
78		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
79		0X0000	0X0000	0X0000	0X0000	0x00	0x00	0XFF	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
80	Send completion signal to host, branch to "Retrieve tube number"	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0X87	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0101	42	0X00, 0X00, 0X001F, 0X0101, 42),
81	End Rack branch target	0X0000	0X0000	0X0000	0X0000	0X00	0XFF	0X00	0X00	0X0000	0X2F	0X001B	0x44	0X0000	0X00	0X00	0X0004	0X0000	0X0000	0X00, 0X00, 0X0004, 0X0000, 0X0000),
82		0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X00	0X0000	0	0X001C	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
83	Eject Rack	0X0000	0X0000	ER	0X0000	0X00	0X00	0X33	0X00	0X0000	0	0X001D	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
84	Loop to PH1	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	27	0X00, 0X00, 0X0000, 0X0101, 27),
85	[redacted]	S1	0X0000	0X0000	0X0000	0X32	0X00	0X00	0X00	0X0000	0	0x0000	0x00	0x0000	0x00	0x00	0x0002	0x0000	0X0000	0x00, 0x00, 0x0002, 0x0000, 0X0000),
86	[redacted]	0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0	0x0005	0x42	0x0033	0x01	0x01	0X8303	0X0000	0X0000	0x01, 0x01, 0X8303, 0X0000, 0X0000),
87	[redacted]	S0	0X0000	0X0000	0X0000	0X33	0X00	0X00	0X00	0X0000	0	0X0000	0x00	0X0000	0X00	0X00	0X0002	0X0000	0X0000	0X00, 0X00, 0X0002, 0X0000, 0X0000),
88	[redacted]	0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0002	0X0000	0X0000	0X00, 0X00, 0x0002, 0X0000, 0X0000),
89	[redacted]	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0032	0x00	0x80	0X8001	0X0001	91	0x00, 0x80, 0X8001, 0X0001, 91),
90	[redacted]	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x1F	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	94	0x00, 0x00, 0x0000, 0x0101, 94),
91	[redacted]	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0032	0x00	0x40	0X8001	0X0001	93	0x00, 0x40, 0X8001, 0X0001, 93),
92	[redacted]	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x20	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	94	0x00, 0x00, 0x0000, 0x0101, 94),
93	[redacted]	0X0000	0X0000	0X0000	0X0000	0X00	0x00	0x00	0x00	0X0000	0x21	0x0000	0x00	0X0000	0x00	0x00	0x0000	0x0101	0x3045	0x00, 0x00, 0x0000, 0x0101, 0x3045),
94	Set SP and CP at pinched Standby position; EndGoBranchTarget Make sure SPA and STM idle	0x0000	HS	0X0000	0X0000	0xFF	0X21	0XFF	0X00	0X0000	0	0X001E	0x44	0X0000	0X00	0X00	0x8E0E	0X0000	0X0000	0X00, 0X00, 0x8E0E, 0X0000, 0X0000),
95	Branch to End of GO sequence	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	99	0X00, 0X00, 0X0000, 0X0101, 99),
96	Subr: Move Next	0X0000	0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0X001F	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),

Fig. 8B

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
97	End Subr: Branch to WaitUntilSTMAtIdle1	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	40	0X00, 0X00, 0X0000, 0X0101, 40),
98	Couldn't GO: flash red button for 6 seconds	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0x0181	0x02	0x6001	0x12	0x00	0X0000	0x0000	0X0000	0x12, 0x00, 0X0000, 0x0000, 0X0000),
99	End of GO sequence	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
100	Begin of "0e"(Clear Racks): full stop	RE	RE	RE	0X0000	0XFF	0XFF	0XFF	0X00	0X0000	0x2F	0X0020	0x44	0X0000	0X00	0X00	0X8E0E	0X0000	0X0000	0X00, 0X00, 0X8E0E, 0X0000, 0X0000),
101	Send CR to STM; Home Pipetter	PH	0X0000	CR	0X0000	0X00	0X00	0X33	0X00	0X0000	0	0X0021	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
102	Home STM carriers	0X0000	0X0000	0x0000	0X0000	0XFF	0X00	0XFF	0X00	0X0000	0	0X0022	0x44	0X0000	0X00	0X00	0X8A0A	0X0000	0X0000	0X00, 0X00, 0X8A0A, 0X0000, 0X0000),
103	End of "0e" (Clear Racks)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
104	Begin of "RQ" (Run QC Control)	RE	RE	RE	0X0000	0XFF	0XFF	0XFF	0X00	0X0000	0	0X0023	0x44	0X0000	0X00	0X00	0X8E0E	0X0000	0X0000	0X00, 0X00, 0X8E0E, 0X0000, 0X0000),
105	Retrieve tube number; branch to Wash ("WA") if 1 (0x01); term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x01	0X00	0X0000	0	0X0024	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x5741	0X00, 0X00, 0X0101, 0X0008, 0x5741),
106	Retrieve tube number; branch to Diluent ("DL") if 2 (0x02); term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x02	0X00	0X0000	0	0X0025	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x444C	0X00, 0X00, 0X0101, 0X0008, 0x444C),
107	Retrieve tube number; branch to Diluent ("DL") if 3 (0x03); term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x03	0X00	0X0000	0	0X0026	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x444C	0X00, 0X00, 0X0101, 0X0008, 0x444C),
108	Retrieve tube number; branch to AutoFocus ("17") if 5 (0x05); term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x05	0X00	0X0000	0	0X0027	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x3137	0X00, 0X00, 0X0101, 0X0008, 0x3137),
109	Retrieve tube number; branch to Diluent ("DL") if 10 (0x0A); term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x0A	0X00	0X0000	0	0X0028	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x444C	0X00, 0X00, 0X0101, 0X0008, 0x444C),
110	Retrieve tube id (bar code)	0X0000	0X0000	0X0707	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0029	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
111	Get sample info from host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3032	0X81	0X002A	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
112	If SM replies '00', branch to "Move to Next control tube position"	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	146	0X00, 0X00, 0X0101, 0X0020, 146),
113	If SM replies '-2', branch to "0e" (Clear Rack)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X2D32	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
114	To test tube	TT	0X0000	0X0000	0X0000	0x11	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
115		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
116	Wait for "Image processing idle"	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
117	Start sheath for background capture	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),
118	Wait for SB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
119	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0069	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
120	Capture background and wait for frame processing complete (future wait for frame capture complete) or short sample detector	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0X83	0x0000	0x00	0x0032	0x00	0x02	0x0001	0x0010	122	0x00, 0x02, 0x0001, 0x0010, 122),
121	Send "Short Sample" signal and wait for frame processing complete (future wait for frame capture complete). If exceeds 10 secs - goto BX	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0x31	0X006A	0x43	0x0000	0x00	0x00	0X0010	0x0000	0x4258	0x00, 0x00, 0X0010, 0x0000, 0x4258),
122	Turn off EP pump on SPA	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
123	Wait for EB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
124	Move pipette down to aspirate position in test tube	TD	0X0000	0X0000	0X0000	0X13	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
125	Wait for TD complete and "Image processing idle"	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0x3338	0x37	0X0000	0X00	0X0000	0X00	0X00	0x9212	0X0000	0X0000	0X00, 0X00, 0x9212, 0X0000, 0X0000),
126	Start aspiration for sample transfer	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
127	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
128	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X006B	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
129	Capture sample frames and wait for sample frame capture complete or short sample detector	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0X85	0x0000	0x00	0x0032	0X00	0x02	0x0001	0x0010	131	0X00, 0x02, 0x0001, 0x0010, 131),
130	Send "Short Sample" signal and wait for sample frame capture complete	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0x31	0X006C	0x43	0X0000	0X00	0X00	0X0010	0X0000	0X4258	0X00, 0X00, 0X0010, 0X0000, 0X4258),
131	Turn off EP pump on SPA; SP pump on FBA	EB	EB	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
132	Wait for EB's complete (SPA and FBA)	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X8606	0X0000	0X0000	0X00, 0X00, 0X8606, 0X0000, 0X0000),
133	To Waste Well	TW	DB	0X0000	0X0000	0x15	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
134		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
135		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
136	Turn On Rinse Pump and Rinse Pipetter	TR	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
137		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
138		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
139	Clear Pipetter/Home CP and SP	CP	HC	0x0000	0X0000	0X16	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
140		0X0000	0X0000	0X0000	0X0000	0XFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
141		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
142		0X0000	0X0000	0X0000	0X0000	0x00	0x00	0XFF	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
143	Send completion signal to host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0X87	0X0000	0X00	0X0000	0X00	0X00	0x0101	0x0000	0x0000	0X00, 0X00, 0x0101, 0x0000, 0x0000),
144	Wait for control result from host; branch to "0e" (Clear Rack) if failed (0)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3245	0	0X002C	0x44	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),

Fig. 8C

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
145	If SM replies '0' branch to '0ef' (Clear Rack)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
146	Move to Next control tube position	0X0000	0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0X002D	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
147	Branch to "16" (Go Resume)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	0x3136	0X00, 0X00, 0X0000, 0X0101, 0x3136),
148	End of RQ sequence	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
149	Bert to 317 (AutoFocus control) Reset HLC1	[redacted]	RE	RE	0X0000	0XFF	0XFF	0XFF	0X00	0X0000	0	0X002E	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
150	Retrieve control id (bar code)	[redacted]	0X0000	0X0707	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X002F	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
151	Get sample info from host	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3032	0x81	0X0030	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
152	If SM replies 00 branch to "Move to Next control tube position (AF)	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	326	0X00, 0X00, 0X0101, 0X0020, 326),
153	If SM replies '2d' branch to '0ef' (Clear Rack)	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X2D32	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
154	Report current auto focus position (requires point) home	[redacted]	0X0000	0X0000	HW	0X00	0X00	0X00	0x31	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
155	Wait for OBA complete	[redacted]	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
156	Return to autofocus position1	[redacted]	0X0000	0X0000	MO	0X00	0X00	0X00	0x32	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
157	Wait for OBA complete	[redacted]	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
158	To test tube (initialize EP pump)	[redacted]	0X0000	0X0000	0X0000	0x11	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
159	Wait for pump complete	[redacted]	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
160	Dummy state (future wait for host to verify ready for new image capture)	[redacted]	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0X0000	0	0X0061	0x42	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
161	Move pipette down to aspirate position in test tube (Pump)	[redacted]	0X0000	0X0000	0X0000	0X13	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
162	Wait for TD complete	[redacted]	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
163	If AutoFocusReadyForCommand (all not were ready for a command)	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x14	0X0000	0X00	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
164	Wait for en auto focus command	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3133	0	0x2000	0x04	0X0000	0X00	0X00	0X001F	0x0000	0x0000	0X00, 0X00, 0X001F, 0x0000, 0x0000),
165	SM reply "0006" AutoFocusClearUp	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	313	0X00, 0X00, 0X0101, 0x2020, 313),
166	SM reply "3131" AutoFocus1_FirstEyeAdjustment	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3031	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	187	0X00, 0X00, 0X0101, 0x2020, 187),
167	SM reply "3032" AutoFocusCoarse	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3032	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	197	0X00, 0X00, 0X0101, 0x2020, 197),
168	SM reply "3033" AutoFocusPeak	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3033	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	224	0X00, 0X00, 0X0101, 0x2020, 224),
169	SM reply "3034" AutoFocusClinical	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3034	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	252	0X00, 0X00, 0X0101, 0x2020, 252),
170	SM reply "3035" AutoFocusClinical	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3035	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	328	0X00, 0X00, 0X0101, 0x2020, 328),
171	SM reply "3130" AutoFocusCoarseFineOffset	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3130	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	283	0X00, 0X00, 0X0101, 0x2020, 283),
172	SM reply "3131" AutoFocusPeakFineOffset	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3131	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	285	0X00, 0X00, 0X0101, 0x2020, 285),
173	SM reply "3132" AutoFocusClinicalFineOffset	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3132	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	287	0X00, 0X00, 0X0101, 0x2020, 287),
174	SM reply "3230" AutoFocusForward1	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3230	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	289	0X00, 0X00, 0X0101, 0x2020, 289),
175	SM reply "3231" AutoFocusForward2	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3231	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	291	0X00, 0X00, 0X0101, 0x2020, 291),
176	SM reply "3232" AutoFocusForward4	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3232	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	293	0X00, 0X00, 0X0101, 0x2020, 293),
177	SM reply "3233" AutoFocusForward8	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3233	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	295	0X00, 0X00, 0X0101, 0x2020, 295),
178	SM reply "3234" AutoFocusForward16	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3234	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	297	0X00, 0X00, 0X0101, 0x2020, 297),
179	SM reply "3235" AutoFocusForward32	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3235	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	299	0X00, 0X00, 0X0101, 0x2020, 299),
180	SM reply "3236" AutoFocusForward64	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3236	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	301	0X00, 0X00, 0X0101, 0x2020, 301),
181	SM reply "3237" AutoFocusForward128	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3237	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	303	0X00, 0X00, 0X0101, 0x2020, 303),
182	SM reply "3238" AutoFocusForward256	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3238	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	305	0X00, 0X00, 0X0101, 0x2020, 305),
183	SM reply "3239" AutoFocusForward512	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3239	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	307	0X00, 0X00, 0X0101, 0x2020, 307),
184	SM reply "3241" AutoFocusForward1024	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3241	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	309	0X00, 0X00, 0X0101, 0x2020, 309),
185	SM reply "3242" AutoFocusForward2048	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3242	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0x2020	311	0X00, 0X00, 0X0101, 0x2020, 311),
186	Branch to AutoFocusReadyForCommand	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	163	0X00, 0X00, 0X0000, 0X0101, 163),
187	AutoFocus Optical Adjustment Send current stroke setting to host	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x8B	0X0000	0X00	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
188	Wait for stroke setting	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3130	0	0x2000	0x04	0X0000	0X00	0X00	0X001F	0x0000	0x0000	0X00, 0X00, 0X001F, 0x0000, 0x0000),
189	Pause host to take effect	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0	0X0032	0x42	0X0000	0X00	0X00	0X001F	0x0000	0x0000	0X00, 0X00, 0X001F, 0x0000, 0x0000),

Fig. 8D

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
190	Send strobe setting to SM	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x8B	0X0000	0X00	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
191	Wait for "image processing idle"	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
192	Capture background for light level	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0x0000	0X83	0x0000	0x00	0x0000	0x00	0x00	0x0101	0x0000	0x0000	0x00, 0x00, 0x0101, 0x0000, 0x0000),
193	WaitForSMToBeDoneWithBackgroundIs: Wait for SM to be done with light level backgrounds	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0	0x0000	0x00	0x0000	0x00	0x00	0X0010	0x0000	0x0000	0x00, 0x00, 0X0010, 0x0000, 0x0000),
194	If SM replies '00' branch to "Handle strobe", else fall through	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	279	0X00, 0X00, 0X0101, 0X0020, 279),
195	Send completion signal to host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0x87	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
196	Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	163	0X00, 0X00, 0X0000, 0X0101, 163),
197	AutoFocusCoarse: Retrieve control id (bar code)	0X0000	0X0000	0X0707	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X002F	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
198	Get sample info from host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3032	0x81	0X0030	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
199	If SM replies '00' branch to "Move to Next control tube position (AF)"	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	326	0X00, 0X00, 0X0101, 0X0020, 326),
200	If SM replies '-2' branch to "Set (Clear Rack)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X2D32	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
201	Wait for "image processing idle"	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
202	Start sheath for background capture	0X0000	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
203	Wait for SB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
204	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0018	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
205	Capture background and wait for frame processing complete (future wait for frame capture complete) or short sample detector	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0X83	0x0000	0x00	0x0032	0x00	0x02	0x0001	0x0010	207	0x00, 0x02, 0x0001, 0x0010, 207),
206	Send "Short Sample" message and wait for frame processing complete (future wait for frame capture complete) (if exceeds 10 secs) goto BX	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0x31	0x0019	0x43	0X0000	0x00	0x00	0X0010	0x0000	0x4258	0x00, 0x00, 0X0010, 0x0000, 0x4258),
207	Turn off EF pump on SPA	0X0000	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
208	Wait for EB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
209	Initial offset A (coarse)	0X0000	0X0000	0X0000	IA	0X00	0X00	0X00	0x33	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
210	Wait for OBA back to Idle	0X0000	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
211	Wait for "image processing idle"	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
212	Start aspiration for sample transfer	SA	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
213	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
214	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0062	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
215	CoarseFW1vAF	0X0000	0X0000	NA	0X00	0x28	0X00	0x33	0X0000	0	0X0041	0x44	0X0000	0X00	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
216	Wait for OBA back to Idle	0X0000	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
217	Capture sample frames (SMOSAINext(AutoFocusPosition)) and wait for sample frame capture complete or short sample detector	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0X8D	0x0000	0x00	0x0032	0X00	0x02	0x0001	0x0010	219	0X00, 0x02, 0x0001, 0x0010, 219),
218	Send "Short Sample" message and wait for sample frame capture complete	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0x31	0X0063	0x43	0X0000	0X00	0X00	0X0010	0X0000	0X4258	0X00, 0X00, 0X0010, 0X0000, 0X4258),
219	If SM argument to "DontGatheringImages" is 00, branch to Forward1OnFocusMotor, else fall through	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	215	0X00, 0X00, 0X0101, 0X0020, 215),
220	Send completion signal to host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0x87	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
221	Home Pumps X	HC	HC	0X0000	0X0000	0x27	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
222	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
223	Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	163	0X00, 0X00, 0X0000, 0X0101, 163),
224	AutoFocusPeak: Retrieve control id (bar code)	0X0000	0X0000	0X0707	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X002F	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
225	Get sample info from host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3032	0x81	0X0030	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
226	If SM replies '00' branch to "Move to Next control tube position (AF)"	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	326	0X00, 0X00, 0X0101, 0X0020, 326),
227	If SM replies '-2' branch to "Set (Clear Rack)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X2D32	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
228	Wait for "image processing idle"	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
229	Start sheath for background capture	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
230	Wait for SB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
231	Timer delay before capture	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0018	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),

Fig. 8E

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
232	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0X83	0x0000	0x00	0x0032	0x00	0x02	0x0001	0x0010	234	0x00, 0x02, 0x0001, 0x0010, 234),
233	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0x31	0X0019	0x43	0x0000	0x00	0x00	0X0010	0x0000	0x4258	0x00, 0x00, 0X0010, 0x0000, 0x4258),
234	[illegible]	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),
235	[illegible]	[illegible]	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
236	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x2D31	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	335	0X00, 0X00, 0X0101, 0X0020, 335),
237	[illegible]	[illegible]	0X0000	0X0000	IB	0X00	0X00	0X00	0x33	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
238	[illegible]	[illegible]	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
239	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
240	[illegible]	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
241	[illegible]	[illegible]	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
242	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0X00	0x00	0X0000	0	0X0062	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
243	[illegible]	[illegible]	0X0000	0X0000	NB	0X00	0x28	0X00	0x33	0X0000	0	0X0041	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
244	[illegible]	[illegible]	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
245	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0X8D	0x0000	0x00	0x0032	0X00	0x02	0x0001	0x0010	247	0X00, 0x02, 0x0001, 0x0010, 247),
246	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0x31	0X0063	0x43	0X0000	0X00	0X00	0X0010	0X0000	0X4258	0X00, 0X00, 0X0010, 0X0000, 0X4258),
247	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	243	0X00, 0X00, 0X0101, 0X0020, 243),
248	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0x87	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
249	[illegible]	HC	HC	0X0000	0X0000	0x27	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
250	[illegible]	[illegible]	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
251	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	163	0X00, 0X00, 0X0000, 0X0101, 163),
252	[illegible]	[illegible]	0X0000	0X0707	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X002F	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
253	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3032	0x81	0X0030	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
254	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	326	0X00, 0X00, 0X0101, 0X0020, 326),
255	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X2D32	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	0x3045	0X00, 0X00, 0X0101, 0X0020, 0x3045),
256	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0x3338	0x37	0X0000	0x00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
257	[illegible]	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
258	[illegible]	[illegible]	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
259	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0X0018	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
260	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0X83	0x0000	0x00	0x0032	0x00	0x02	0x0001	0x0010	262	0x00, 0x02, 0x0001, 0x0010, 262),
261	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X3034	0x31	0X0019	0x43	0x0000	0x00	0x00	0X0010	0x0000	0x4258	0x00, 0x00, 0X0010, 0x0000, 0x4258),
262	[illegible]	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
263	[illegible]	[illegible]	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
264	[illegible]	[illegible]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x2D31	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	335	0X00, 0X00, 0X0101, 0X0020, 335),
265	[illegible]	[illegible]	0X0000	0X0000	IC	0X00	0X00	0X00	0x33	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
266	[illegible]	[illegible]	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
267	[illegible]	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
268	[illegible]	[illegible]	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
269	[illegible]	[illegible]	0X0000	0X0000	0X0000	0x00	0x00	0X00	0x00	0X0000	0	0X0062	0x42	0X0000	0x00	0x00	0X0000	0x0000	0X0000	0x00, 0x00, 0X0000, 0x0000, 0X0000),
270	[illegible]	[illegible]	0X0000	0X0000	NC	0X00	0x28	0X00	0x33	0X0000	0	0X0041	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
271	[illegible]	[illegible]	0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0X003B	0x44	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),

Fig. 8F

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
318	[illegible]		RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
319	[illegible]		0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
320	[illegible]		0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
321	[illegible]		HC	MN	0X0000	0X16	0X00	0X00	0X00	0X0000	0x36	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
322	[illegible]		0X0000	0X0000	0X0000	0XFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
323	[illegible]		0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
324	[illegible]		0X0000	0X0000	0X0000	0x00	0x00	0XFF	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
325	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	0x3136	0X00, 0X00, 0X0000, 0X0101, 0x3136),
326	[illegible]		0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0X0049	0x04	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
327	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	0x3136	0X00, 0X00, 0X0000, 0X0101, 0x3136),
328	[illegible]		0X0000	0X0000	0x0000	0X00	0X00	0X00	0xFF	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
329	[illegible]		0X0000	0X0000	VP	0X00	0X00	0X00	0x00	0X0000	0	0x2000	0x04	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
330	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0x00	0x31	0X0000	0x00	0X0000	0X00	0X0000	0X00	0X00	0x4040	0x0040	333	0X00, 0X00, 0x4040, 0x0040, 333),
331	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0x00	0x30	0X0000	0x00	0X0000	0X00	0X0000	0X00	0X00	0x4040	0x0040	334	0X00, 0X00, 0x4040, 0x0040, 334),
332	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0101	330	0X00, 0X00, 0X001F, 0X0101, 330),
333	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x29	0x0020	0x03	0X0000	0X00	0X00	0X0000	0x0000	163	0X00, 0X00, 0X0000, 0x0000, 163),
334	[illegible]		0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x28	0x0020	0x03	0X0000	0X00	0X00	0X0000	0x0000	163	0X00, 0X00, 0X0000, 0x0000, 163),
335	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0x00A0	0x04	0X0000	0X00	0X00	0x0000	0X0000	0X0000	0X00, 0X00, 0x0000, 0X0000, 0X0000),
336	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
337	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0x00	0X00	0X0000	0x2c	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
338	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0x00	0X00	0X0000	0	0X004A	0x42	0X0000	0X00	0x00	0X0000	0x0080	0x0000	0X00, 0x00, 0X0000, 0x0080, 0x0000),
339	[illegible]	0X0000	0X0000	WR	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X004B	0x44	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
340	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X52	0X00	0X0000	0	0X004C	0X42	0X0032	0X00	0X01	0X0000	0x0009	345	0X00, 0X01, 0X0000, 0x0009, 345),
341	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0x00	0X00	0X0000	0x2c	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
342	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0x00	0X00	0X0000	0	0X004D	0x42	0X0000	0X00	0X00	0X0000	0x0080	0X0000	0X00, 0X00, 0X0000, 0x0080, 0X0000),
343	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0x9000	0x05	0x40	0x0101	0X0001	0X5344	0x05, 0x40, 0x0101, 0X0001, 0X5344),
344	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	349	0X00, 0X00, 0X0000, 0X0101, 349),
345	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0x9000	0x05	0x41	0X0101	0x0001	0X574C	0x05, 0x41, 0X0101, 0x0001, 0X574C),
346	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0x9000	0x05	0x42	0x0101	0x0001	0X574D	0x05, 0x42, 0x0101, 0x0001, 0X574D),
347	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0000	0x0101	0X5753	0X00, 0X00, 0x0000, 0x0101, 0X5753),
348	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
349	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
350	[illegible]	TT	0X0000	0X0000	0X0000	0x11	0x00	0X00	0X00	0X0000	0x33	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
351	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
352	[illegible]	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
353	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
354	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0X0000	0x32	0X004E	0x42	0X0000	0x00	0X00	0X0010	0X0000	0x4256	0x00, 0X00, 0X0010, 0X0000, 0x4256),
355	[illegible]	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
356	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
357	[illegible]	TD	0X0000	0X0000	0X0000	0X13	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
358	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
359	[illegible]	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
360	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
361	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X0000	0x32	0x0065	0x42	0X0000	0X00	0X00	0X0010	0X0000	0X0000	0X00, 0X00, 0X0010, 0X0000, 0X0000),
362	[illegible]	EB	EB	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
363	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
364	[illegible]	TW	DB	0X0000	0X0000	0x15	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
365	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
366	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
367	Drain Flowcell	DF	0x0000	0X0000	0X0000	0X26	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
368		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
369	Prime Sheath Supply Line	PS	0X0000	0X0000	0X0000	0x20	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
370		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
371	Prime All Pumps	PP	PC	0X0000	0X0000	0X21	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
372		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
373		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
374	Prime Inner Lines #1	TR	PL	0X0000	0X0000	0x00	0x24	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
375		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),

Fig. 8H

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
272	Capture sample frame (SMCSAtNextAutoFocusPosition) and wait for sample frame capture complete or short sample detect	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0X8D	0x0000	0x00	0x0032	0X00	0x02	0x0001	0x0010	274	0X00, 0x02, 0x0001, 0x0010, 274),
273	Send "Short Sample" message and wait for sample frame capture complete	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X3036	0x31	0X0063	0x43	0X0000	0X00	0X00	0X0010	0X0000	0X4258	0X00, 0X00, 0X0010, 0X0000, 0X4258),
274	If SM argument to "DoneGatheringImages" is 00 branch to Forward1OnFocusMotor, else fall through	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X3030	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0020	270	0X00, 0X00, 0X0101, 0X0020, 270),
275	Send completion signal to host	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000	0x87	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
276	Home Pumps	HC	HC	0X0000	0X0000	0x27	0x00	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
277	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
278	Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	163	0X00, 0X00, 0X0000, 0X0101, 163),
279	HandleStrobe, wait for strobe setting	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x3130		0 0X0044	0x44	0X0000	0X00	0X00	0X001F	0x0000	0x0000	0X00, 0X00, 0X001F, 0x0000, 0x0000),
280	Pause for it to take effect	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000		0 0X0045	0x42	0X0000	0X00	0X00	0X001F	0x0000	0x0000	0X00, 0X00, 0X001F, 0x0000, 0x0000),
281	Send strobe setting to SM	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x8B	0X0000	0X00	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
282	Branch back to WaitForSMToBeDoneWithBackgrounds	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0x0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0000	0x0101	193	0X00, 0X00, 0x0000, 0x0101, 193),
283	AutoFocusCoarseFinalOffset	0X0000	0X0000	BA	0X00	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
284	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
285	AutoFocusPeakFinalOffset	0X0000	0X0000	0X0000	BB	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
286	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
287	AutoFocusClinicalFinalOffset	0X0000	0X0000	0X0000	BC	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
288	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
289	AutoFocusForward1	0X0000	0X0000	0X0000	F0	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
290	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
291	AutoFocusForward2	0X0000	0X0000	0X0000	F1	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
292	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
293	AutoFocusForward4	0X0000	0X0000	0X0000	F2	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
294	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
295	AutoFocusForward8	[redacted]	0X0000	0X0000	F3	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
296	Wait for OBA and Branch to AutoFocusReadyForCommand	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
297	AutoFocusForward16	0X0000	0X0000	0X0000	F4	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
298	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
299	AutoFocusForward32	[redacted]	0X0000	0X0000	F5	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
300	Wait for OBA and Branch to AutoFocusReadyForCommand	[redacted]	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
301	AutoFocusForward64	0X0000	0X0000	0X0000	F6	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
302	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
303	AutoFocusForward128	0X0000	0X0000	0X0000	F7	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
304	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
305	AutoFocusForward256	0X0000	0X0000	0X0000	F8	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
306	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
307	AutoFocusForward512	0X0000	0X0000	0X0000	F9	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
308	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
309	AutoFocusForward1024	0X0000	0X0000	0X0000	FA	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
310	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
311	AutoFocusForward2048	0X0000	0X0000	0X0000	FB	0X00	0X00	0X00	0x33	0X0000		0 0x2000	0x04	0X0000	0X00	0X00	0x0040	0X0000	0X0000	0X00, 0X00, 0x0040, 0X0000, 0X0000),
312	Wait for OBA and Branch to AutoFocusReadyForCommand	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0xFF	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0040	0x0040	163	0X00, 0X00, 0x0040, 0x0040, 163),
313	AutoFocusCleanUp: ToWasteWell	[redacted]	DB	0X0000	0X0000	0x15	0x00	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
314		[redacted]	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
315		[redacted]	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
316	Test Sheath Full Sensor	[redacted]	0X0000	0X0000	0X0000	0X00	0x00	0X00	0X00	0X0000		0 0X0000	0X00	0x0033	0x01	0x01	0x0101	0x0001	318	0x01, 0x01, 0x0101, 0x0001, 318),
317	Turn On Rinse Pump and Rinse Pipettor	[redacted]	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000		0 0X0000	0X00	0X0000	0X00	0X00	0x0000	0x001F	319	0X00, 0X00, 0x0000, 0x001F, 319),

Fig. 8G

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
376		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
377	Prime Inner Lines #2	PL	0x0000	0X0000	0X0000	0X22	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
378		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
379	Prime Aspiration Line	TR	PA	0X0000	0X0000	0X00	0x26	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
380		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
381		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
382	Debubble	0X0000	DE	0X0000	0X0000	0X00	0x30	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
383		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
384	Turn On Rinse Pump and Rinse Pipetter	TR	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
385		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
386		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
387	Clear Pipetter	CP	HC	0X0000	0X0000	0X16	0X00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
388		0X0000	0X0000	0X0000	0X0000	0XFF	0X00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
389		0X0000	0X0000	0X0000	0X0000	0x00	0XFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
390	Move to Next tube position	0X0000	0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0X0051	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
391	Branch to "16" (Go Resume)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	0x3136	0X00, 0X00, 0X0000, 0X0101, 0x3136),
392	End WA (Wash)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0000	0x0000	0x0000	0X00, 0X00, 0X0000, 0x0000, 0x0000),
393	Start ZZ (Sleep)	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0X0000	0xFF	0X0000	0X00	0X0000	0X00	0X00	0x0000	0x0080	0X0000	0X00, 0X00, 0x0000, 0x0080, 0X0000),
394	End ZZ (Sleep)	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0X0000	0xFF	0X0000	0X00	0X0000	0X00	0X00	0x0000	0X0000	0X0000	0X00, 0X00, 0x0000, 0X0000, 0X0000),
395	Start SS: Reset HLCs	RE	RE	RE	RE	0XFF	0XFF	0XFF	0XFF	0X0000	0	0X0052	0x44	0X0000	0X00	0X00	0XCA4A	0X0000	0X0000	0X00, 0X00, 0XCA4A, 0X0000, 0X0000),
396	Make sure output is clear (STM:IC returns 'T' or 'F')	0x0000	0x0000	IC	0X0000	0x00	0x00	0x00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0101	0X0000	0X0000	0X00, 0X00, 0x0101, 0X0000, 0X0000),
397	Got 'T'? If so, branch to SetFrontPanelLightsSS1	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x54	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0101	0x0008	400	0X00, 0X00, 0x0101, 0x0008, 400),
398	Got 'F'? If so, branch to end of GO sequence	0x0000	0x0000	0x0000	0x0000	0x00	0x00	0x46	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0101	0x0008	434	0X00, 0X00, 0x0101, 0x0008, 434),
399	Loop back to LookingForT1	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0x0000	0X00	0X00	0x0000	0x0101	397	0x00, 0X00, 0x0000, 0x0101, 397),
400	Set front panel lights (button green, LED blue)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X00	0X0000	0	0X0000	0X00	0X6000	0X09	0X00	0X005F	0X0000	0X0000	0X09, 0X00, 0X005F, 0X0000, 0X0000),
401	Tell STM to find rack	PH	0X0000	M1	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
402	If 31 from STM goto WaitUntilSTMAtIdle_SS	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X31	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0008	405	0X00, 0X00, 0X0101, 0X0008, 405),
403	No rack = EndSSBranchTarget	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X39	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0008	434	0X00, 0X00, 0X0101, 0X0008, 434),
404	Loop Back	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0101	402	0X00, 0X00, 0X001F, 0X0101, 402),
405	WaitUntilSTMAtIdle_SS (wait for SPA idle as well)	0X0000	0X0000	0X0000	0X0000	0xFF	0X00	0XFF	0X00	0X0000	0	0X0053	0x44	0X0000	0X00	0X00	0x8A0A	0X0000	0X0000	0X00, 0X00, 0x8A0A, 0X0000, 0X0000),
406	Move to Next tube position (first tube aspirate position)	0X0000	0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0X0054	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
407	To test tube	TT	0X0000	0X0000	0X0000	0x11	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
408		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
409	Start sheath for background capture	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),
410	Wait for SB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
411	Timer delay	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0	0x0055	0x42	0X0000	0x00	0x00	0x0000	0x0000	0X0000	0x00, 0x00, 0x0000, 0x0000, 0X0000),
412	Turn off EP pump on SPA	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0x001F, 0X0000, 0X0000),
413	Wait for EB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
414	Move pipette down to aspirate position in test tube	TD	0X0000	0X0000	0X0000	0X13	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
415	Wait for TD complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
416	Start aspiration for sample transfer	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
417	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
418	Timer delay	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X0000	0	0x0056	0x42	0X0000	0X00	0X00	0X0010	0X0000	0X0000	0X00, 0X00, 0X0010, 0X0000, 0X0000),
419	Turn off EP pump on SPA; SP pump on FBA	EB	EB	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
420	Wait for EB's complete (SPA and FBA)	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X8606	0X0000	0X0000	0X00, 0X00, 0X8606, 0X0000, 0X0000),
421	To Waste Well	TW	DB	0X0000	0X0000	0x15	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
422		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
423		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
424	Turn On Rinse Pump and Rinse Pipetter	TR	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
425		0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
426		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
427	Clear Pipetter/Home CP and SP/Move to Next Tube	CP	HC	MN	0X0000	0X16	0X00	0X00	0X00	0X0000	0x36	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
428		0X0000	0X0000	0X0000	0X0000	0XFF	0x00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
429		0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
430		0X0000	0X0000	0X0000	0X0000	0x00	0x00	0XFF	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
431	Make sure SPA and STM Idle	0x0000	0X0000	0X0000	0X0000	0xFF	0X00	0XFF	0X00	0X0000	0	0X0057	0x44	0X0000	0X00	0X00	0x8A0A	0X0000	0X0000	0X00, 0X00, 0x8A0A, 0X0000, 0X0000),
432	Send CR to STM; Home Pipetter	PH	0X0000	CR	0X0000	0X00	0X00	0X33	0X00	0X0000	0	0X0058	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
433	Home STM carriers	0X0000	0X0000	0x0000	0X0000	0XFF	0X00	0XFF	0X00	0X0000	0x2F	0X0059	0x44	0X0000	0X00	0X00	0X8A0A	0X0000	0X0000	0X00, 0X00, 0X8A0A, 0X0000, 0X0000),
434	End of SS sequence	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
435	SW:Wait for (from short transfer) period; Turn pumps on	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X7046	0X00	0X01	0X0101	0X0000	0X0000	0X00, 0X01, 0X0101, 0X0000, 0X0000),

Fig. 8I

State Index	State Description	SPAcmd	FBAcmd	STMcmd	OBAcmd	SPAstat	FBAstat	STMstat	OBAstat	SMTest	ToSM	Tvalue	Tfunc	Sens	STst	SMsk	End	Bran	Dest	Translated Parameters
436	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
437	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
438	[illegible] Unconditionally Branch to GO [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0000	0x0101	0X474F	0X00, 0X00, 0x0000, 0x0101, 0X474F),
439	End of SW [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
440	MWW at start from [illegible] standby period [illegible] strobe on	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X7046	0X00	0X01	0X0101	0X0000	0X0000	0X00, 0X01, 0X0101, 0X0000, 0X0000),
441	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
442	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
443	MW Unconditionally Branch to GO [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0000	0x0101	0X474F	0X00, 0X00, 0x0000, 0x0101, 0X474F),
444	End of MW [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
445	LW Wake up from long standby period Turn strobe on [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X7046	0X00	0X01	0X0101	0X0000	0X0000	0X00, 0X01, 0X0101, 0X0000, 0X0000),
446	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
447	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
448	MW Unconditionally Branch to GO [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0x0000	0x0101	0X474F	0X00, 0X00, 0x0000, 0x0101, 0X474F),
449	End of LW [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
450	SD: Shutdown = Auto shutdown after standby timer expired [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0XB030	0x05	0x43	0x0001	0X0101	453	0x05, 0x43, 0x0001, 0X0101, 453),
451	[illegible] Turn strobe off	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X7000	0X00	0X01	0X0101	0X0000	0X0000	0X00, 0X01, 0X0101, 0X0000, 0X0000),
452	[illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
453	End of SD [illegible]	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X0101	0X0000	0X0000	0X00, 0X00, 0X0101, 0X0000, 0X0000),
454	Start DL (Diluent): To test tube	TT	0X0000	0X0000	0X0000	0x11	0x00	0X00	0X00	0X0000	0x34	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
455	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
456	Start sheath for background capture	SB	0X0000	0X0000	0X0000	0x31	0X00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
457	Wait for SB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
458	Timer delay	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0x00	0X0000	0x32	0X005A	0x42	0X0000	0x00	0x00	0x0000	0x0000	0X0000	0x00, 0x00, 0x0000, 0x0000, 0X0000),
459	Turn off EP pump on SPA	EB	0X0000	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
460	Wait for EB complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
461	Move pipette down to aspirate position in test tube	TD	0X0000	0X0000	0X0000	0X13	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
462	Wait for TD complete	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
463	Start aspiration for sample transfer	AS	RC	0X0000	0X0000	0x17	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
464	Wait for AS and RC complete	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0x8606	0X0000	0X0000	0X00, 0X00, 0x8606, 0X0000, 0X0000),
465	Timer delay	0X0000	0X0000	0X0000	0X0000	0x00	0X00	0X00	0X00	0X0000	0x32	0x0067	0x42	0X0000	0X00	0X00	0X0010	0X0000	0X0000	0X00, 0X00, 0X0010, 0X0000, 0X0000),
466	Turn off EP pump on SPA, SP pump on FBA	EB	EB	0X0000	0X0000	0x34	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
467	Wait for EB's complete (SPA and FBA)	0X0000	0X0000	0X0000	0X0000	0xFF	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X8606	0X0000	0X0000	0X00, 0X00, 0X8606, 0X0000, 0X0000),
468	To Waste Well	TW	DB	0X0000	0X0000	0x15	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
469	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
470	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
471	Turn On Rinse Pump and Rinse Pipetter	TR	RP	0X0000	0X0000	0X00	0x25	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
472	[illegible]	0X0000	0X0000	0X0000	0X0000	0xFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
473	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
474	Clear Pipetter/Home CP and SP	CP	HC	0x0000	0X0000	0X16	0X00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
475	[illegible]	0X0000	0X0000	0X0000	0X0000	0XFF	0x00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
476	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0xFF	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
477	[illegible]	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0XFF	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
478	Retrieve tube number; branch to Kill ("KL") if 10 (0x0A), term otherwise	0X0000	0X0000	0X0708	0X0000	0X00	0X00	0x0A	0X00	0X0000	0x32	0X005D	0x44	0X0000	0X00	0X00	0X0101	0X0008	0x4B4C	0X00, 0X00, 0X0101, 0X0008, 0x4B4C),
479	Move to Next tube position	0X0000	0X0000	MN	0X0000	0X00	0X00	0X32	0X00	0X0000	0x36	0X005E	0x44	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
480	Branch to "16" (Go Resume)	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0x32	0X0000	0X00	0X0000	0X00	0X00	0X0000	0X0101	0x3136	0X00, 0X00, 0X0000, 0X0101, 0x3136),
481	End of DL sequence	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
482	Start KL (Kill): Send CR to STM, HS to FBA+C240; Home Pipettor; flash STANDBY	PH	HS	CR	0X0000	0x12	0x21	0X33	0X00	0X0000	0	0X005F	0x44	0x0000	0x00	0X00	0x8E0E	0X0000	0X0000	0x00, 0X00, 0x8E0E, 0X0000, 0X0000),
483	Flash STANDBY	0x0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0X0000	0x00	0x0000	0x00	0x8001	0x10	0X00	0x0101	0X0000	0X0000	0x10, 0X00, 0x0101, 0X0000, 0X0000),
484	Send SMCSleInShutdown message to SM; no exit condition!	0x0000	0X0000	0X0000	0X0000	0x00	0x00	0X00	0X00	0X0000	0x35	0x0000	0x00	0X0000	0X00	0X00	0x0000	0X0000	0X0000	0X00, 0X00, 0x0000, 0X0000, 0X0000),
485	End of KL sequence	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),
486	BX Background Error Exit	EB	EB	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0080	0x44	0X0000	0X00	0X00	0x0000	0X0000	0X0000	0X00, 0X00, 0x0000, 0X0000, 0X0000),
487	Dummy	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0X0000	0X00	0X00	0X001F	0X0000	0X0000	0X00, 0X00, 0X001F, 0X0000, 0X0000),

Fig. 8J

400

402 State Order	404 State Description	406 Energized (Valves Only)	408 EP	410 First Motor	412 Second Motor	414 SP	416 Sensor Select	418 Sensor State	420 Sensor Mask	422 Motor Test	424 SM Test	426 ToSM	428 Tvalue	430 Tfunc	432 End Ctrl	434 Bran Ctrl	436 Dest
0	IDLE		0	80FF	0	80FF	0000	0	0	0	0X0000	0xFF	0X0000	0X0	0x0007	0x0000	0x0000
1	"TT" Home Evacuation Pump / Rotate out to tube	J7 air chrg vlv, EBV3,	80FD	80FF	8441	80FF	0000	0	0	FB	0X0000	0X11	0X0000	0X0	0x0007	0x0000	0x0000
2	Place Roller on Tube (EP -45 Deg)	EBV3,	860C	80FF	0	80FF	0000	0	0	B3	0X0000	0X11	0X0000	0X0	0x0007	0x0000	0x0000
3	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X11	0X0000	0X0	0x0007	0x0000	0x0000
4	"PH" - Home Vertical TO Lift Pippetter AND SEND PIPPETER BACK TO back sensor then to WASTE WELL		80FF	80FE	80FF	80FF	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
5	Home Rotational Motor to back sensor		80FF	80FF	80FE	80FF	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
6	Rotate out -3 deg to waste well		80FF	80FF	8440	80FF	0000	0	0	FB	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
7	Checking pressure	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0X00	0X0000	0X0	0x0001	0x0101	9
8	Recharge	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0X00	0X0000	0X0	0x0001	0x0000	0x0000
9	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X12	0X0000	0X0	0x0007	0x0000	0x0000
10	"TD" - Down to test tube		0	8643	0	80FF	0000	0	0	23	0X0C00	0X13	0X0000	0X0	0x0007	0x0000	0x0000
11	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X13	0X0000	0X0	0x0007	0x0000	0x0000
12	"AS" - Mix Sample (BP 1.5 Sec)	J10 burp vlv, CBV3, EBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X17	0x0004	0x42	0x0000	0x0000	0x0000
13	Delay Before Aspirate	CBV3, EBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X17	0X0023	0X42	0X0000	0x0000	0x0000
14	Aspirate to beginning of Flow Cell	SI, J7 air chrg vlv, CBV3, PBV3,	4009	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0X0024	0x42	0x0000	0x0000	0x0000
15	Activate SBV to fill flow cell while pulling EP during fast push of CP	SBV3,	4022	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0X0025	0x42	0x0000	0x0000	0x0000
16	Activate SBV to fill flow cell while pulling EP during slow push of CP during analysis	SBV3,	401D	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0x0000	0x00	0x0007	0x0000	0x0000
17	Dummy	SBV3,	0	80FF	0	80FF	0000	0	0	33	0X0000	0X17	0X0000	0X0	0x0007	0x0000	0x0000
18	"TW" Lift Pippetter to 2/3 of the tube		80FF	D556	0	80FF	0000	0	0	E3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
19	Lift Pippeter to the top and Spit air	J10 burp vlv,	80FF	80FE	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
20	Rotate In to Waste Well		80FF	80FF	8442	80FF	0000	0	0	FB	0X0000	0x00	0X0000	0X0	0x0007	0x0000	0x0000
21	Down to Waste Well		80FF	8647	0	80FF	0000	0	0	E3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
22	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X15	0X0000	0X0	0x0007	0x0000	0x0000
23	"CP" Clean Flowcell Window for 2 sec	CBV3, SBV3,	4019	80FF	0	80FF	0000	0	0	33	0X0000	0X00	0X0027	0X42	0x0000	0x0000	0x0000
24	Raise Pippetter		80FF	D556	0	80FF	0000	0	0	E3	0X0000	0x16	0X0000	0X0	0x0007	0x0000	0x0000
25	Clear Pippetter	J10 burp vlv,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x16	0X0005	0X42	0x0000	0x0000	0x0000
26	Lift Pippeter		80FF	80FE	0	80FF	0000	0	0	F3	0X0000	0x16	0X0000	0X0	0x0007	0x0000	0x0000
27	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X16	0X0000	0X0	0x0007	0x0000	0x0000
28	"PS" Prime Sheath Supply Line		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0028	0X42	0x0000	0x0000	0x0000
29	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X20	0X0000	0X0	0x0007	0x0000	0x0000

FIG. 9A

30	"PP" Prime Evacuation Pump	EBV3,	D758	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
31	Hold EBV3 for 3 sec	EBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x00	0X0029	0X42	0x0000	0x0000	0x0000
32	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X21	0X0000	0X0	0x0007	0x0000	0x0000
33	"PL" Home EP	EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
34	Prime Inner Line #2	CBV3, SBV3,	DB5C	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
35	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x22	0X0000	0X0	0x0007	0x0000	0x0000
36	"TR" Turn On Rinse Pump for 2 Sec		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x23	0X002A	0X42	0x0000	0x0000	0x0000
37	Checking pressure	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0x23	0X0000	0X0	0x0001	0x0101	38
38	Recharge	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0x23	0X0000	0X0	0x0001	0x0000	0x0000
39	Fill sheath tank for 2 sec		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x23	0x0006	0x42	0x0000	0x0000	0x0000
40	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X23	0X0000	0X0	0x0007	0x0000	0x0000
41	"HP" Home EP	EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
42	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X24	0X0000	0X0	0x0007	0x0000	0x0000
43	"SB" Transfer Sheath During Background	CBV3, SBV3,	401A	80FF	0	80FF	0000	0	0	33	0X0000	0X31	0x0000	0x0	0x0101	0x0000	0x0000
44	Dummy	CBV3, SBV3,	0	80FF	0	80FF	0000	0	0	33	0X0000	0X31	0X0000	0X0	0x0000	0x0000	0x0000
45	"EB" End Background (EP off)	CBV3, SBV3,	80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X34	0x0000	0x0	0x0007	0x0000	0x0000
46	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X34	0X0000	0X0	0x0007	0x0000	0x0000
47	"DF" Drain Flowcell	PBV3,	DE5F	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
48	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X26	0X0000	0X0	0x0007	0x0000	0x0000
49	"IC" Home EP	EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
50	Place Roller on Tube (EP -45 Deg)	EBV3,	860C	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
51	Down to test tube	PBV3,	80FF	8643	0	80FF	0000	0	0	E3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
52	Wash Flow Cell With IRISOLVE	PBV3,	E061	80FF	0	80FF	0000	0	0	B3	0X0000	0X00	0x0000	0x0	0x0007	0x0000	0x0000
53	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X27	0x0000	0x0	0x0007	0x0000	0x0000
54	Start "ZZ"		0	80FF	0	80FF	0000	0	0	0	0X0000	0xFF	0x0000	0x0	0x0000	0x0080	0x0000
55	End "ZZ"		0	80FF	0	80FF	0000	0	0	0	0X0000	0xFF	0x0000	0x0	0x0000	0x0000	0x0000
56	"RV" Reset Valves (subroutine to be used only during "BD" to turn off valves)		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
57	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X26	0X0000	0X0	0x0007	0x0000	0x0000
58	"FP" Checking pressure		80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0X00	0X0000	0X0	0x0001	0x0101	60
59	Recharge		80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0X00	0X0000	0X0	0x0001	0x0000	0x0000
60	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x30	0X0000	0X0	0x0007	0x0000	0x0000
61	"S1" Turn on Sheath fill pump		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X32	0x0000	0x0	0x0010	0x0000	0x0000
62	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X32	0X0000	0X0	0x0000	0x0000	0x0000

FIG. 9B

63	"S0" Turn off Sheath fill pump		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X33	0x0000	0x0	0x0101	0x0000	0x0000
64	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X33	0X0000	0X0	0x0000	0x0000	0x0000
65	"TQ" Turn On Rinse Pump for 2 Sec without fill sheath		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x23	0X002B	0X42	0x0000	0x0000	0x0000
66	Checking pressure	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	6	54	F3	0X0000	0x23	0X0000	0X0	0x0001	0x0101	68
67	Recharge	J7 air chrg vlv,	80FF	80FF	0	80FF	10B0	5	54	F3	0X0000	0x23	0X0000	0X0	0x0001	0x0000	0x0000
68	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0X23	0X0000	0X0	0x0007	0x0000	0x0000
69	"HC" Initialize Evacuation Pump	J7 air chrg vlv, EBV3,	80FD	80FF	0	80FF	0000	0	0	F3	0X0000	0x27	0X0000	0X0	0x0007	0x0000	0x0000
70	Place Roller on Tube (EP -45 Deg)	EBV3,	860C	80FF	0	80FF	0000	0	0	B3	0X0000	0x27	0X0000	0X0	0x0007	0x0000	0x0000
71	Dummy		80FF	80FF	0	80FF	0000	0	0	F3	0X0000	0x27	0X0000	0X0	0x0007	0x0000	0x0000

FIG. 9C

502 State Order	504 State Description	506 Energized (Fluid Block Valves Only)	508 CP	510 Dummy Motor	512 Dummy Motor	514 SP	516 Sensor Select	518 Sensor State	520 Sensor Mask	522 Motor Test	524 SM Test	526 ToSM	528 Tvalue	530 Tfunc	532 End Ctrl	534 Bran Ctrl	536 Dest
0	IDLE		0	80FF	80FF	0	0000	0	0	0	0X0000	0xFF	0X0000	0X0	0x0007	0x0000	0x0000
1	HC Home CP and SP	CBV3,	80FE	80FF	80FF	80FE	0000	0	0	FF	0X0000	0x21	0X0000	0X0	0x0007	0x0000	0x0000
2	Place Roller on Tube (CP 45 Deg)	CBV3,	8601	80FF	80FF	80FF	0000	0	0	BF	0X0000	0x21	0X0000	0X0	0x0007	0x0000	0x0000
3	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X21	0X0000	0X0	0x0007	0x0000	0x0000
4	PC Prime Cannula and Sheath Pump	CBV3,	C546	80FF	80FF	CA4B	0000	0	0	BE	0X0000	0x00	0X0000	0x0	0x0007	0x0000	0x0000
5	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0x23	0X0000	0X0	0x0007	0x0000	0x0000
6	PL Prime Lines	DRV3, EBV3,	CC4D	80FF	80FF	80FF	0000	0	0	BF	0X0000	0x00	0X0000	0x0	0x0007	0x0000	0x0000
7	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0x24	0X0000	0X0	0x0007	0x0000	0x0000
8	Rinse Pipette - RP On	SBV3, PBV3, EBV3,	80FF	80FF	80FF	C849	0000	0	0	FE	0X0000	0x00	0x0000	0x0	0x0007	0x0000	0x0000
9	Open SBV, PBV, and EBV to vent excess pressure out	SBV3, PBV3, EBV3,	80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0x00	0x0014	0x42	0x0000	0x0000	0x0000
10	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X25	0X0000	0X0	0x0007	0x0000	0x0000
11	PA Prime Apparation Line	SBV3, PBV3, EBV3,	80FF	80FF	80FF	CE4F	0000	0	0	FE	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
12	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0x26	0X0000	0X0	0x0007	0x0000	0x0000
13	HP Home CP and SP	CBV3,	80FE	80FF	80FF	80FE	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
14	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X27	0X0000	0X0	0x0007	0x0000	0x0000
15	IRC Delay before running CP test push		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X28	0x0015	0x42	0x0000	0x0000	0x0000
16	Eject push		4001	80FF	80FF	80FF	0000	0	0	3F	0X0000	0X28	0x0016	0x42	0x0000	0x0000	0x0000
17	Slow CP push during analysis		4002	80FF	80FF	80FF	0000	0	0	3F	0X0000	0X28	0X0000	0X0	0X0007	0x0000	0x0000
18	Dummy		0	80FF	80FF	80FF	0000	0	0	3F	0X0000	0X28	0X0000	0x0	0x0000	0x0000	0x0000
19	CR Place SP roller on hose with 45 deg move		80FF	80FF	80FF	8601	0000	0	0	FE	0X0000	0X29	0X0000	0X0	0x0007	0x0000	0x0000
20	Debubble for 3 Secs	CBV3, SBV3, DRV3, EBV3,	80FF	80FF	80FF	C344	0000	0	0	FE	0X0000	0x29	0X0000	0x0	0x0007	0x0000	0x0000
21	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X29	0X0000	0X0	0x0007	0x0000	0x0000
22	TDE Debubble (SP 10 Rev)	CBV3, SBV3, DRV3, EBV3,	80FF	80FF	80FF	D051	0000	0	0	FE	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
23	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X30	0X0000	0X0	0x0007	0x0000	0x0000
24	Begin ZZ		0	80FF	80FF	0	0000	0	0	0	0X0000	0xFF	0X0000	0X0	0x0000	0x0080	0x0000
25	End ZZ		0	80FF	80FF	0	0000	0	0	0	0X0000	0xFF	0X0000	0X0	0x0000	0x0000	0x0000
26	IC Home CP	CBV3,	80FE	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
27	Place Roller on Tube (CP 45 Deg)	CBV3,	8601	80FF	80FF	80FF	0000	0	0	BF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
28	Open Drain	DRV3, EBV3,	D253	80FF	80FF	80FF	0000	0	0	BF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
29	Dummy		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X31	0X0000	0X0	0x0007	0x0000	0x0000

FIG. 10A

30	[redacted]		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
31	[redacted]		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X30	0X0000	0X0	0x0007	0x0000	0x0000
32	[redacted]	CBV3,	80FE	80FF	80FF	80FE	0000	0	0	FF	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
33	[redacted]	CBV3,	8601	80FF	80FF	8601	0000	0	0	BE	0X0000	0X00	0X0000	0X0	0x0007	0x0000	0x0000
34	[redacted]		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X21	0X0000	0X0	0x0007	0x0000	0x0000
35	[redacted]		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X34	0X0000	0X0	0x0007	0x0000	0x0000
36	[redacted]		80FF	80FF	80FF	80FF	0000	0	0	FF	0X0000	0X34	0X0000	0X0	0x0007	0x0000	0x0000

FIG. 10B

602	604	606	608	610	612	614	616	618	620	622	624	626	628	630	632	634	636	638	640
State owner	State Description	Dor	Dand	SM	CM	CI	CO	RC	SenSel	Stst	Smsk	Mtst	SMtst	ToSM	Tval	Tfnc	EndCtl	BrnCtl	Dest
0	Reset in general	0x00000000	0xFFFFFFEF	0X80FF	0X80FF	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0X00	0X0000	0XFF	0X0000	0X00	0x0000	0x0000	0x0000
1	Start M1; Start HC	0x00000000	0xFFFFFFEF	0X80FD	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
2	End HC	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
3	Start HR	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
4	End HR	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
5	Start US; Branch if upstream not ready	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X00900	0X0000	0X0000	0x0030	0x04	0x04	0xFF	0X0000	0	0X000A	0X42	0X0000	0x0101	12
6	Branch if buffer full	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0X0000	0X0230	0X00	0X04	0XFF	0X0000	0	0X0000	0X00	0X0001	0x0101	12
7	Signal OK to send rack; Wait for complete signal (Iready)	0x00000010	0xFFFFFFFF	0X0000	0X0000	0X80FF	0X0000	0X0000	0X0030	0X00	0X04	0XFF	0X0000	0	0X0000	0X00	0X0001	0X0000	0x0000
8	Delay 200 ms	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X000B	0X42	0X0000	0X0000	0X0000
9	Unsignal OK to send rack; feed in 2 sec	0x00000000	0xFFFFFFEF	0X0000	0X0000	0X0900	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X000C	0X42	0x0000	0X0000	0X0000
10	End US	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X80FF	0X0000	0X0000	0X0030	0X04	0X04	0XFF	0X0000	0	0X0000	0X00	0X0006	0X0001	5
11	Wait if no other rack	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0X0000	0X0040	0X1F	0X1F	0XFF	0X0000	0	0X000D	0X42	0x0001	0X0000	0X0000
12	Run Rack in	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X0900	0X0900	0x0000	0X0040	0X1F	0X1F	0X00	0X0000	0	0X000E	0x43	0x0007	0x0000	17
13	Extra Second to make flush; Read rack ID for transmission	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X0900	0X0900	0x0000	0x0040	0X00	0x1F	0X00	0X0000	0	0X000F	0x42	0x0006	0x0000	0x0000
14	Stop Conveyor; Check if room at output side	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0230	0X01	0X01	0XFF	0X0000	0	0x0000	0x00	0x0006	0x0001	17
15	Move Rack in	0x00000000	0xFFFFFFFF	0x8040	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X00004	0X00	0x0007	0x0000	0x0000
16	Got Rack	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0X0000	0X0000	0x00	0x00	0x00	0X0000	0x31	0X0010	0X43	0x0000	0x0101	18
17	No Rack	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X0000	0x39	0X0011	0X42	0x0101	0X0000	0X0000
18	End M1; End U2	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0X0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0000	0X0000	0X0000
19	Start MN; move to next tube position	0x00000000	0xFFFFFFFF	0x8000	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
20	Complete the move and get tube number	0x00000000	0xFFFFFFFF	0x80FF	0X0000	0X80FF	0X80FF	0x0000	0xE000	0X00	0X1F	0X00	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
21	Stabilize before reading tube detector	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0X00	0X0000	0	0X0012	0x42	0x0007	0x0000	0x0000
22	Store tube detector value; branch to Scan if tube present	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X10A0	0x05	0X48	0X00	0X0000	0	0x0000	0x00	0x0202	0x0001	24
23	Unconditional branch to EndMN	0x00000000	0xFFFFFFFF	0x80FF	0X0000	0X80FF	0X80FF	0x0000	0x0000	0X00	0x00	0X00	0X0000	0	0X0000	0X00	0x0000	0x0202	25
24	Scan barcode	0x00000000	0xFFFFFFFF	0x80FF	0X0000	0X80FF	0X80FF	0x0000	0X4000	0X00	0X1F	0X00	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
25	End MN; send completion to MC	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0X32	0X0000	0X00	0x0007	0x0000	0x0000
26	Start ER	0x00000000	0xFFFFFFFF	0x8041	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
27	[illegible]	0x00000000	0xFFFFFFFF	0x8004	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
28	[illegible]	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X0900	0x0000	0X0230	0X02	0X02	0X00	0X0000	0	0X0013	0x43	0x0007	0x0000	30
29	[illegible]	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X0900	0x0000	0X0000	0X00	0X00	0X00	0X0000	0	0X0014	0x42	0x0007	0x0000	0x0000
30	End ER; send completion to MC	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0X33	0X0000	0X00	0x0007	0x0000	0x0000
31	Begin BC; [illegible]	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X4000	0X00	0X1F	0X00	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
32	[illegible]	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0000	0X00	0X00	0X00	0X0000	0x44	0X0015	0X42	0x0000	0x0000	0x0000
33	End BC; [illegible]	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0000	0X00	0X00	0X00	0X0000	0	0X0000	0X00	0x0007	0x0000	0x0000
34	Begin CR; run infeed conveyor in reverse	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X0100	0X80FF	0x0000	0x0000	0X00	0x00	0x00	0X0000	0x30	0X0016	0X02	0x0007	0x0000	0x0000
35	Home sample carrier while discharge runs	0x00000000	0xFFFFFFFF	0X80FD	0x80FD	0X80FF	0x0900	0x0000	0x0000	0X00	0x00	0xFF	0X0000	0	0x0000	0x00	0x0007	0x0000	0x0000
36	Move Sample Lever to eject position	0x00000000	0xFFFFFFFF	0X8044	0X0000	0X80FF	0x0000	0x0000	0x0000	0X00	0x00	0xFF	0X0000	0	0x0000	0x00	0x0007	0x0000	0x0000
37	Home Sample Lever	0x00000000	0xFFFFFFFF	0X80FD	0X0000	0X80FF	0x0000	0x0000	0x0000	0X00	0x00	0xFF	0X0000	0	0x0000	0x00	0x0007	0x0000	0x0000

FIG. 11A

38	Run carrier output buffer motor until sensor not blocked or until time out	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0x0000	0x0000	0x0230	0X00	0x01	0x00	0X0000	0	0X0017	0x42	0x0001	0x0000	0x0000
39	Run CO a little longer	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0x0000	0x0000	0x0000	0X00	0x00	0x00	0X0000	0	0X0018	0x42	0x0007	0x0000	0x0000
40	End CR	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0x0000	0X00	0x00	0x00	0X0000	0X33	0X0000	0X00	0x0101	0x0000	0x0000
41	Begin IC (Is Clear); if output sensor not blocked branch to "Is Clear = True"	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0x0230	0X00	0x01	0x00	0X0000	0x30	0X0000	0X00	0x0101	0x0001	44
42	Run carrier output buffer motor until sensor not blocked or until time out, if timeout branch to "Is Clear = False"	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0x0900	0x0000	0x0230	0X00	0x01	0x00	0X0000	0	0X0019	0x43	0x0001	0x0000	45
43	Run CO a little longer	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0x0900	0x0000	0x0000	0X00	0x00	0x00	0X0000	0	0X001A	0x42	0x0007	0x0000	0x0000
44	Is Clear = True; send 'T', branch to End IS	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0x0000	0X00	0x00	0x00	0X0000	0x54	0X0000	0X00	0x0000	0x0101	46
45	Is Clear = False; send 'F'	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0x0000	0X00	0x00	0x00	0X0000	0x46	0X0000	0X00	0x0101	0x0000	0x0000
46	End IS	0x00000000	0xFFFFFFFF	0X80FF	0X0000	0X80FF	0X80FF	0x0000	0x0000	0X00	0x00	0x00	0X0000		0X0000	0X00	0x0101	0x0000	0x0000
47	Begin WR	0x00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0030	0X04	0X04	0XFF	0X0000	0	0X0000	0X00	0X0001	0X0000	0X0000
48		0X00000000	0xFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0X52	0X001B	0X42	0X0000	0X0000	0X0000
49	End WR	0x00000000	0XFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0000	0X00	0X00	0XFF	0X0000	0	0X0000	0X00	0X0000	0X0000	0X0000
50	Begin ZZ	0x00000000	0XFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0000	0X00	0X00	0x00	0X0000	0xFF	0X0000	0X00	0X0000	0x0080	0X0000
51	End ZZ	0x00000000	0XFFFFFFFF	0X0000	0X0000	0X0000	0X0000	0x0000	0X0000	0X00	0X00	0x00	0X0000	0xFF	0X0000	0X00	0X0000	0X0000	0X0000

FIG. 11B